CLAIMS

1. A continuous process for forming extrudate of bioresorbable thermoplastic materials generally having constant cross-sections, comprising:

heating the material at a temperature higher than the melting point thereof and extruding the extrudate;

forming the extrudate;

controlling the formation of the extrudate to maintain a substantially constant shape by varying the speed of a motor driving the extruder;

cooling the extrudate after exiting the die by passing the extrudate through a cooling bath;

placing the extrudate under tension by passing the extrudate through a first puller adjacent the cooling bath and a second puller spaced from said first puller, said second puller running at a higher rate of speed than said first puller; and

heating the extrudate as it passes between said first and second pullers to a temperature above its glass transition temperature.

2. The process as set forth in claim 1 further including the step of passing the thermoplastic polymer extrudate through a die for forming said shape.

3. The process as set forth in claim 2 further including the step of controlling the extrusion rate of the extrudate from the extruder by using a metering pump and a feedback system to control the extruder motor speed.

4. The process as set forth in claim 3 wherein the metering pump controls the rate of extrudate flow into a die.

5. The process as set forth in claim 4 further including the step of measuring the cross-section of said extrudate after exiting said die.

6. The process as set forth in claim 1 wherein said material is heated to between about 125°C and 250°C prior to extrusion.

7. The process as set forth in claim 1 wherein said cooling bath contains water at a temperature between 10°C and 50°C.

8. The process as set forth in claim 1 wherein the polymer is selected from the group consisting of L-lactide, glycolide, D/L lactide, D-lactide and a combination thereof.

9. The process as set forth in claim 1 wherein the extrudate is heated between said first and second pullers to a temperature of between the glass transition temperature and the melting point.

10. The process as set forth in claim 1 wherein the extrudate is heated between said first and second pullers to a temperature of between 70°C and 200°C.

11. The process as set forth in claim 10 wherein the elongation is done in a heated water bath.

12. The process as set forth in claim 10 wherein the elongation is done in an air or inert gas oven.

13. The process as set forth in claim 1 wherein said material is annealed at a temperature of between about 70°C and 110°C while under said tension.

14. The process as set forth in claim 13 where the annealing is done for at least twenty minutes.

15. The process as set forth in claim 13 wherein said annealing is done in an air oven.

16. The process as set forth in claim 13 wherein said annealing takes place in a water bath.

17. The process as set forth in claim 1 wherein the extrusion is maintained in a single generally horizontal plane for the entire process.

18. The process as set forth in claim 1 wherein the extrusion is maintained in single generally horizontal and vertical planes for the entire process.

19. The process as set forth in claim 1 wherein said cooling of the extrudate after exiting the die cools the extrudate to below its glass transition temperature.

20. The process as set forth in claim 1 wherein the extrudate is heated between the first and second pullers to a temperature below the melting point of the polymer.

21. A continuous process for forming extrudate of bioresorbable thermoplastic materials generally having constant cross-sections, comprising:

heating the material at a temperature higher than the melting point thereof and extruding the extrudate;

forming the extrudate;

controlling the formation of the extrudate to maintain a substantially constant shape by varying the speed of a motor driving the extruder;

cooling the extrudate after exiting the die by passing the extrudate through a cooling bath;

placing the extrudate under tension by passing the extrudate through a first puller adjacent the cooling bath and a second puller spaced from said first puller, said second puller running at a higher rate of speed than said first puller;

heating the extrudate as it passes between said first and second pullers to a temperature above its glass transition temperature; and

releasing the tension on the extrudate after said second puller and prior to allowing the extrudate to cool to room temperature.